

**Amendments to the Claims:**

This listing of claims will replace all prior versions and listings of claims in the application:

**Listing of Claims:**

1.-18. (Cancelled)

19. (Currently Amended) A system for optimizing parameters for PCR, the system comprising:

a reaction vessel receiving element physically divided into two or more segments that are thermally insulated from one another;

a standard microtiter plate spanning an entirety of the reaction vessel receiving element, the standard microtiter plate comprising a plurality of reaction vessels, wherein each of the plurality of the reaction vessels contains a same reaction mixture;

two or more physically distinct devices for heating and cooling the reaction vessel receiving element, wherein each device for heating and cooling is aligned with and dedicated to heat and cool only one segment such that each segment is aligned with a device for heating and cooling; and

a control unit for actuating the system, wherein the devices are actuated independently of one another to set and maintain different temperatures in two adjacent segments;

wherein the ~~system provides~~ devices for heating and cooling provide different temperatures to the segments during a temperature cycle to optimize the parameters for PCR.

20. (Cancelled)

21. (Previously Presented) The system of claim 19, wherein each segment of the reaction vessel receiving element comprises a base plate with one or more tubular, thin-walled reaction vessel holders, which form one piece together with the base plate.

22. (Cancelled)

23. (Previously Presented) The system of claim 19, wherein the segments are insulated from each other with an air gap formed between adjacent segments.

24. (Cancelled)

25. (Previously Presented) The system of claim 19, wherein the segments are insulated from each other with a thermal insulator inserted in a gap between adjacent segments.

26. (Cancelled)

27. (Previously Presented) The system of claim 19, wherein the devices are Peltier elements, wherein the Peltier elements are thermally coupled to each segment.

28. - 34. (Cancelled)

35. (Previously Presented) The system of claim 19, wherein the reaction vessel receiving element is divided into at least four segments.

36. (Cancelled)

37. (Currently Amended) The system of claim 19, wherein the individual segments each have the a same number of recesses.

38. - 40. (Cancelled)

41. (Currently Amended) The system of claim 19, wherein each segment is assigned a temperature sensor operatively connected to the control unit, with which the temperature of the segment concerned is sensed, with the temperature of the segment being controlled on the basis of the temperatures sensed by the individual sensors.

42. (Cancelled)

43. (Previously Presented) The system of claim 19, wherein each segment is assigned one or more temperature equalisation elements.

44. - 48. (Cancelled)

49. (Currently Amended) The system of claim 19, wherein the system is configured such that in one operating mode the segments are so actuated that the temperature difference between adjacent segments is less than a predetermined temperature difference ( $\Delta T$ ).

50. - 52. (Cancelled).

53. (Currently Amended) The system of claim 19, wherein the system is configured such that the parameter optimized is at least one of denaturing temperature, annealing temperature, and elongation temperature.

54. (Currently Amended) The system of claim 19, wherein the system is configured such that the parameter optimized is residence time at a temperature for at least one of denaturing temperature, annealing temperature, and elongation temperature.

55. (Currently Amended) The system of claim 19, wherein the system is configured such that the parameter optimized is rate of temperature change.

56. (Currently Amended) The system of claim 19, further comprising ~~[[a]]~~ an additional control unit for actuating the two or more devices, wherein each of the two or more devices is individually actuated.